

XXXIV.—*Preliminary Notice of new Genera and Species of 'Challenger' Reef-Corals.* By J. J. QUELCH, B.Sc. (Lond.).

PART I.

THE present paper contains short descriptions of five new genera and their typical species in the collection made during the voyage of H.M.S. 'Challenger.' More complete descriptions, with figures, will be given hereafter in the 'Challenger' series, when also their affinities with fossil and recent forms will be discussed. It is sufficient in this notice to point out that *Physogyra* is to be classed with *Plerogyra*, *Napopora* close to *Synarrhœa* and *Stephanaria*, *Sandalolitha* to *Halomitra* and, perhaps, to *Zoopilus*; while *Tichoseris* and *Moseleya* may be mentioned as presenting special interest. *Tichoseris* takes a very clearly transitional place between the Lophoserinæ and the Astræidæ; while *Moseleya*, which I have had the pleasure of naming in honour of Prof. Moseley, seems to necessitate the establishing of a new subfamily of the Astræidæ to receive it—subfamily Moseleyinæ, characterized by the abundant endotheca with the dissepiments in more or less concentric circles, forming nearly complete tabulæ at the centre. The approach which it makes to the Rugosa seems to me to point to the very probable dismemberment of that group.

MOSELEYA, nov. gen.

Corallum compound, flattened, or slightly and broadly convex. Young calicles developing by calicinal marginal budding around a very large median calicle, which has very numerous septal orders, the calicles becoming polygonal and deep at the centre. Epitheca very slight; wall very thin and almost rudimentary, but developed so as to give a distinct simple line of separation to the calicles on the surface, often interrupted, seen in section in a very rudimentary state separating the calicinal centres. Costæ very distinct, thin, and finely denticulate. Septa often confluent and continuous from centre to centre in the line of union between adjoining calicles; very thin and close, finely toothed above, and having the teeth subequal or slightly larger near the centre. Endothecal dissepiments vesicular, very abundantly developed, leaving but a very small portion of the septa free exteriorly, seen in transverse section forming nearly concentric lines, and more or less complete tabulæ at the centre. A false columella

present, seen exteriorly to be formed by the trabeculate and vermiform nature of the innermost upper part of the septa, entirely or almost absent in transverse section, where the septa are seen to meet almost at a point.

Moseleya latistellata, n. sp.

Calicles very large, the median calicle attaining a width of 6 centim., and attached by a very broad base to the surface on which it grew. Epitheca and wall very thin, the wall often rudimentary between the confluent septa of adjacent calicles. Costæ very distinct and finely denticulate above, continuing as well-marked lines to the very base. Septal system containing orders of seven cycles, but the last two cycles are incompletely developed, there being about two hundred septa in the largest calicle; the septa are very thin, finely cut into subequal sharp teeth nearly 1 millim. in length, laterally granulated and thickened chiefly in the direction of the teeth, free above only for a short portion, owing to the great development of endotheca, but at the centre the endotheca is much less developed, and consequently the calicles become much deeper and the septa more prominent. The septa of the first two or three orders are about equal and run quite to the centre; those of the higher orders become smaller and shorter, while rudiments of the highest orders are present only at the extreme edge of the calicles; with the exception of these last, the septa are regularly placed and equally raised, giving a very even appearance to the calicles, especially to the older ones. Pali and true columella absent, but the finely trabeculate edges of the septa give the appearance of a small columella.

Locality. Wednesday Island, Torres Straits, 8 fathoms.

PHYSOGYRA, nov. gen.

Corallum compound, form massive, of very light structure, having the calicles in long, sinuous, more or less mæandroid series, with their walls fused throughout so as to form a simple very thin line of separation between the series. Calicinal centres generally distinct, indicated by the curving of the septa. Costæ almost entirely absent. Epitheca very slightly developed. Septa thin, fragile, very prominent, distant, edge entire. Columella absent. Endotheca well developed, vesicular; the dissepiments continuous between the septa from the centre of the calicle to the wall, very convex above, rather far apart above each other, thus forming wide interseptal chambers. Owing to this great development of

vesiculate endotheca the series of calicinal centres are separated by wide ridges, formed entirely by the thin wall and by the convex dissepiments which stretch from the centre to this thin wall.

This genus will include, besides the following new species, the *Plerogyra Lichtensteini* of Milne-Edwards and Haime; the genus *Plerogyra* being limited to those forms in which the walls are not fused together so as to form a thin lamina, but in which the series remain distinct with their walls separated, except occasionally when two free-growing ends meet and grow together.

Physogyra aperta, n. sp.

Corallum convex above; wall very thin, simple, sometimes almost rudimentary. Costæ very slightly developed, and then only at the margin of the series. The series of the calicinal centres open and shallow, in no part deep and narrow; the centres are often difficult to distinguish, owing to the uniform development of dissepiments along the series. Width of series about 16 millim., but at times more than 20 millim. The septa are 2-4 millim. apart, very thin and very projecting, subequal, except at the ends of series where some are very small, easily broken away, leaving the vesicular dissepimental ridges almost bare. The dissepiments are thin, convex above, easily broken away, about 3 millim. apart from those above or below at the wall, closer at their inner terminations, forming simple, curved, wide interseptal chambers.

Locality. Banda.

SANDALOLITHA, nov. gen.

Corallum compound, flattened, free, much elongated and very thin. Wall sparsely porous and extremely reduced; distinct costæ, closely granulated or very finely and bluntly echinulate, curving towards the short axis. Calicles few, in the long diameter of the corallum; parent calicle very large, occupying the centre, forming almost the entire corallum, with very numerous septa, there being about seven complete cycles, a much larger number of cycles being developed in the long axis of the corallum; smaller calicles very few, distinctly radiate, developing in the course of and interrupting the larger septa in the long axis of the parent calicle. The septa are crowded and very long, curving towards the short axis, and of more or less equal vertical extent, very low, giving an even laminate appearance to the corallum. Synapticula well developed and forming strong connexions at the basal parts of the septa. Columella rudimentary and trabecular.

Sandalolitha dentata, n. sp.

Corallum almost flat, irregularly sandal-shaped, fragile, translucent, being about 6 millim. thick except immediately around the mouth of the central calicle where the septa are somewhat elevated and thickened. The parent calicle attains a large size (nearly 15 centim. in length) before the smaller calicles begin to develop. Wall very thin, pierced with numerous small pores; costæ unequal, with very small granulated blunt spines, distinct, curving in radiating lines towards the short axis of the corallum except at the centre where the costal spines become crowded over a thickened circular space that seems to have been a former base of attachment. Septa of the central calicle of seven complete cycles, but incomplete orders are developed at the extremities of the long axis of as many as sixteen cycles; those of the first three cycles subequal, slightly thickened and prominent at the centre; and, with the exception of the very small ones, all the septa are nearly equally raised over the general surface, cut into strong long and narrow teeth, very granulated, especially at the apex of the teeth, which are divided into little points forming a blunt or pointed end. The septa of the higher orders unite one on each side with one of a lower order at that part of it from which they originate.

Locality. Tahiti.

TICHOSERIS, nov. gen.

Corallum compound, massive, columnar or lobate, with neither transverse calicinal ridges nor longitudinal crests, astræiform. Calicles with distinct solid walls, which are thin at their edges, but thick at their basal parts; calicinal centres arranged either singly within their own wall, or united in more or less irregular and sinuous groups of two or more incompletely separated from each other and surrounded by the common wall of the calicle from which they are developed. New calicles arise either by direct fission of a single calicle forming two separate ones with distinctly raised walls, or by the upgrowth of the synapticula at different parts of the calicle to form new walls, the resulting centres often forming maenandroid series, until the development of their own wall isolates them. Septa not at all confluent, entire, those of adjoining calicles quite separated by the raised walls. Columella absent or forming a very small styliform projection at the point of coalescence of the septa. Synapticula distant, very unequally and irregularly developed, being generally rather thick interseptal outgrowths of the wall.

Tichoseris obtusata, n. sp.

Corallum consisting of blunt, elongated, lobate masses of very dense structure throughout. Calicles small, often separate, subcircular or elongated and polygonal, about 3-5 millim. in diameter, rather deep, but almost filled up by the closely packed septa; more generally two to six or more calicles are grouped together, with their walls incompletely developed, so that they give the appearance of many centres surrounded by one raised wall, which is of very irregular shape and size, being long, sinuous, and narrow, or rounded and wide, often 5-14 millim. in diameter. Wall very solid, thin-edged above, but thick below. Septa not exsert, very numerous, in the separate calicles there are as many as five cycles, but the fifth is very incomplete; those of the first two cycles are subequal, those of the fourth and fifth very small; but all are entire, very thin above, extremely granulated or finely echinulate on their sides, with their inner edges nearly vertical. Columella very rudimentary.

Locality. Reefs, Fiji Islands.

NAPOPORA, nov. gen.

Corallum compound, porous. Gemmation intracalicular, the developing buds with distinct centres almost destitute of distinct walls, at first united in groups of two to six, and surrounded by the common wall of the parent calicle; but as development proceeds they are separated off by a narrow, raised, distinct wall. Calicular depressions very variable in size and shape, according to the number, position, and degree of development of the buds. Walls of the older calicles porous, distinctly raised, angular. Septa generally of two cycles, rudimentary. Pali six, sometimes one smaller than the others or absent, generally well developed, and distinctly marking the position of the calicular centres. Columella rudimentary, represented by small papilliform projections, often absent.

Napopora irregularis, n. sp.

Corallum ramose; branches rather short, moderately thick, obtuse, and slightly or not at all compressed. Calicles very variable, seen in all stages of development, with many granular points or flattened projections; the single calicles with distinct walls, subcircular, about 2 millim. in diameter; the larger ones with many distinct centres in the same cavity, with a common wall, raised, angular, and of irregular shape, with a diameter of about 4-9 millim. Many of the develop-

ing centres present no trace of a wall, others possess walls more or less incomplete; but the centres are easily distinguished by the position of the pali. The septa of two or three cycles, generally twelve, sometimes fewer, rudimentary, sometimes rather distinct at their inner ends and united two by two where the pali are placed. The pali are six, prominent, sometimes one very small or absent. Columella inconspicuous.

Locality. Tahiti.

PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

February 20, 1884.—Prof. T. G. Bonney, D.Sc., F.R.S.,
President, in the Chair.

The following communications were read:—

1. "On a recent Exposure of the Shelly Patches in the Boulder-clay at Bridlington." By G. W. Lamplugh, Esq. Communicated by Dr. J. Gwyn Jeffreys, F.R.S., F.G.S.

During some long-continued windy weather in the early part of the winter of 1882–83, the Boulder-clay, usually hidden by sand and shingle, was laid bare on the foreshore at Bridlington Quay. The beds thus exposed belong to the lowest recognized part of the glacial series of Yorkshire, the "Basement Boulder-clay." Over this, parted occasionally by a little sand or gravel, comes the Purple Boulder-clay, the Laminated Clay being wholly absent. The Basement Clay thus exposed contained angular and subangular boulders, with rounded pebbles occasionally scratched, besides many crushed masses of sand, sandy gravel, and clay, forming nearly a third of the whole mass. The last, which generally contained marine remains, were very variable in shape and in lithological character. The fauna of the masses varied greatly, both in abundance and in species, those common in one mass being rare or absent in another. The shells were commonly much crushed, though whole specimens occurred occasionally. The author considered that these shell-bearing patches had once formed a part of the bed of a glacial sea, which had been invaded and ploughed up by ice, which had transported them to their present locality. He gave reasons for thinking that they have not come from the immediate neighbourhood, but probably from the north-east, having been floated by icebergs to their present places.